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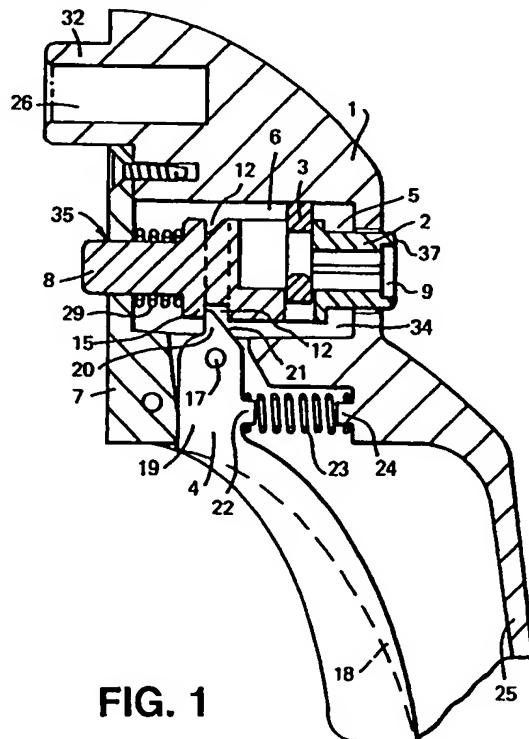
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United Kingdom

## (54) Lockable and releasable handles

(57) A lockable handle comprising a body (1), a barrel (2) slidable axially in a cavity (5), a tumbler (3) slidable transversely of the barrel (2) to engage the body (1), a bolt (8) on the barrel (2) for engagement with a base plate to prevent handle movement. A circumferential channel (12) on the barrel having different profiles at two angular positions around the circumference, and a pivoted trigger (4) engageable with the channel (12) to hold the bolt (8) in extended position and being only releasable therefrom by manual pressure when the barrel (2) is in one of the said angular positions.

A key acts on the tumbler (3) to withdraw it from engagement with the body (1) so that the barrel is free to rotate.

The barrel (2) has a portion of reduced diameter (15) defining the channel (12) at the angular position in which the trigger (4) is releasable and the channel (12) is of reduced width at the angular position in which the trigger is not releasable.



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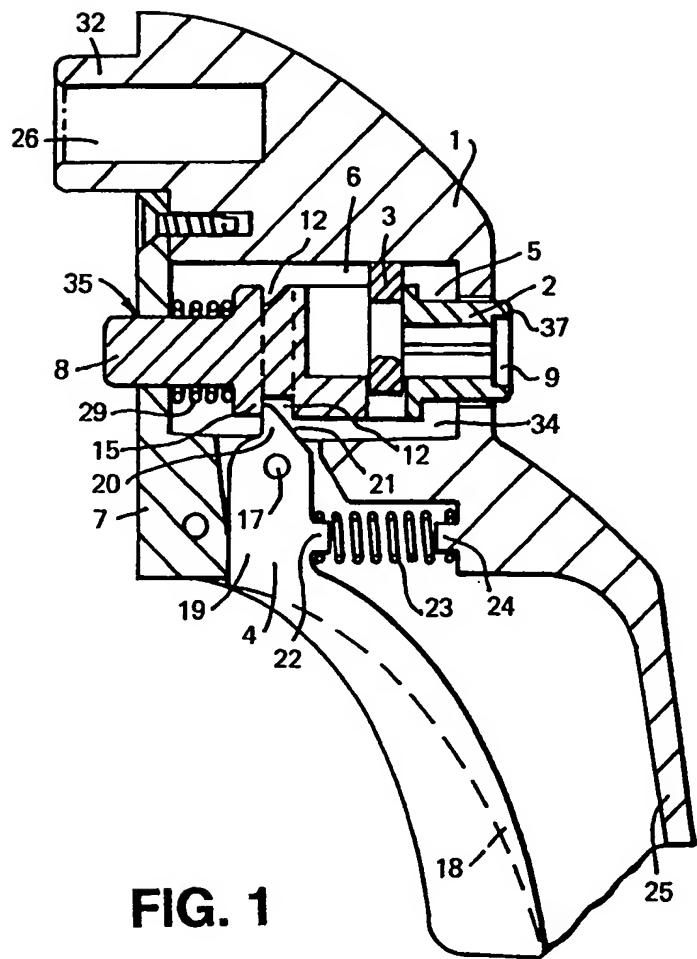
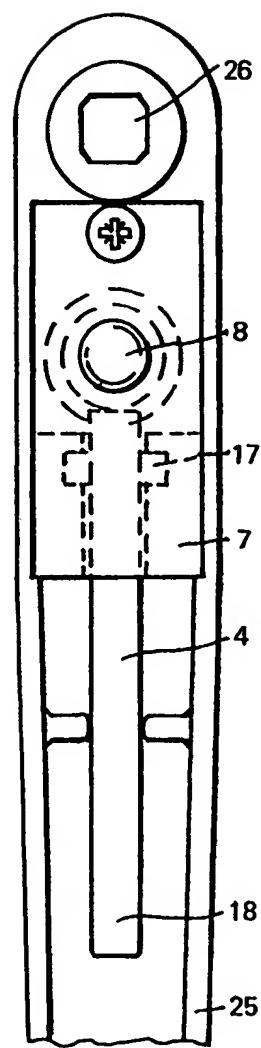
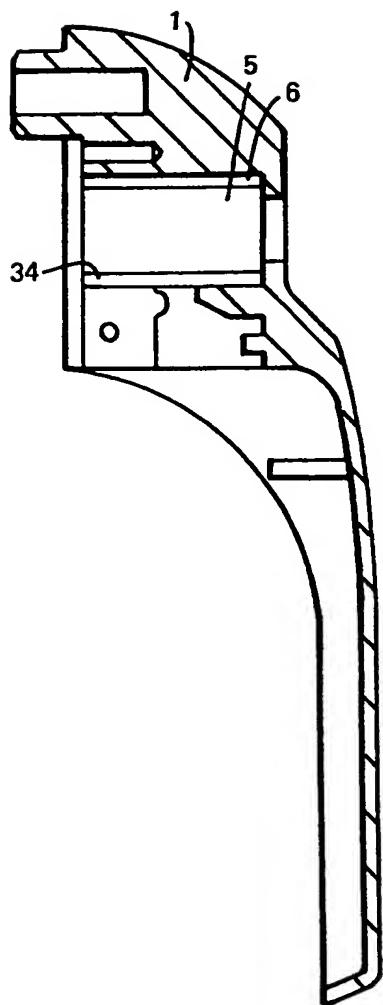


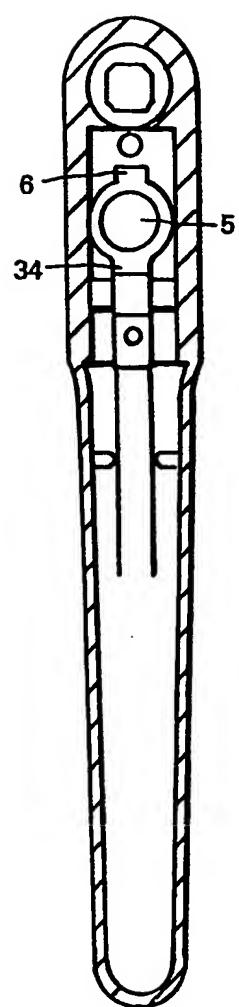
FIG. 1

FIG. 2





**FIG. 3**



**FIG. 4**

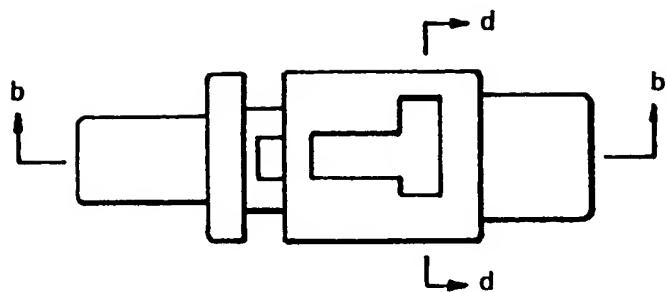


FIG. 5a

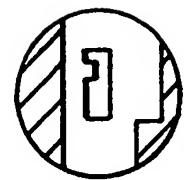


FIG. 5d

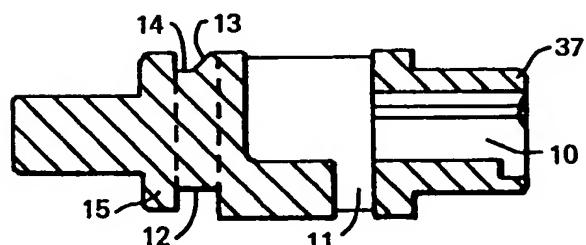


FIG. 5b

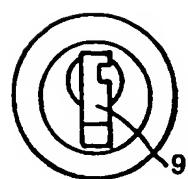


FIG. 5c

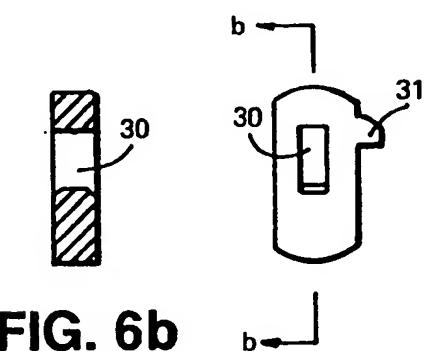
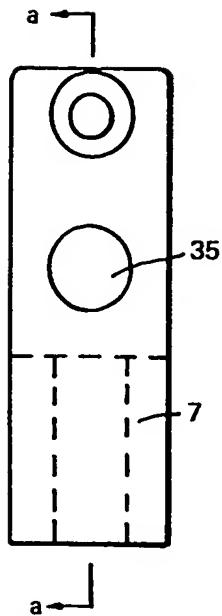
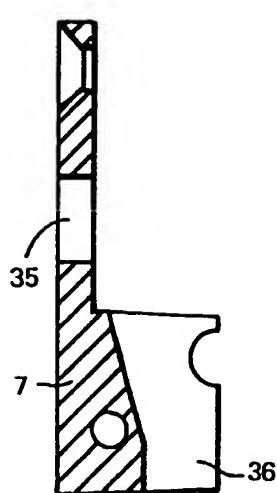
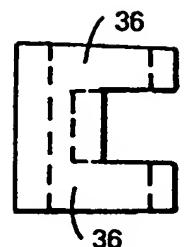
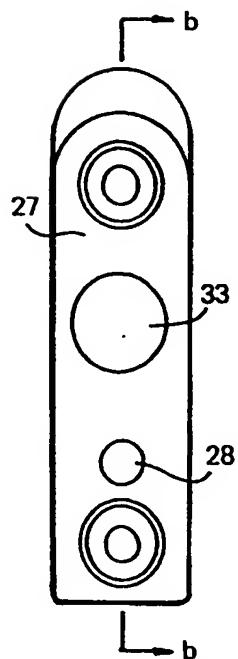
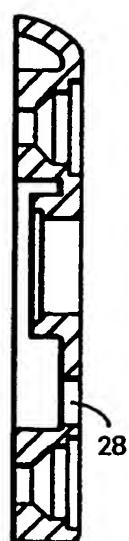
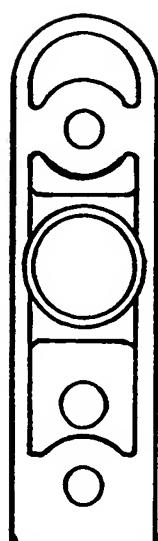


FIG. 6b



FIG. 6a

**FIG. 7b****FIG. 7a****FIG. 7c****FIG. 8a****FIG. 8b****FIG. 8c**

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LOCKABLE AND RELEASABLE HANDLES

15 This invention relates to lockable handles particularly for windows and doors, more especially casement windows.

Various lockable handles with "push-button" locks are known (GB 2 040 344, 2 105 774, 2 147 046, 2 210 096, 2 219 035, 2 223 795, 20 2 226 359) or are commercially available. Generally these handles co-operate with a base plate or other substrate relative to which the handle is rotatable. A lock having a rearwardly-projecting locking pin is slidable in the body of the handle between two positions: an unlocked position in which the pin is retracted; and a locked position 25 in which the pin extends from the rear of the handle and engages a part of the substrate. The lock is moved from the unlocked to the locked position by manual pressure (e.g. of a thumb) on the front of the lock against spring pressure, but it is necessary to insert and use a key to release the lock from the locked position and allow it to return under 30 spring pressure to the unlocked position.

My Irish Patent Application No. 0212/91 filed 22 January 1991 describes a lockable handle assembly comprising a handle body, a lock cylinder slidable axially in a housing in the handle body and having a 35 locking pin extending axially therefrom, one or more step formations in a wall of the housing, a slider element moveable radially from the lock cylinder to engage the step formation(s), the slider element being retractable by operation of a key inserted into the cylinder, an

abutment portion on the slider element, and a compression/torsion spring mounted between the cylinder and the body and also acting on the abutment portion of the slider element, so that the spring urges the cylinder in an axial direction and the slider element in a radial direction simultaneously.

5 Some public bodies, particularly Fire Authorities, have raised objections to the push button locks currently available because they do not have a quick-release mechanism in the event of an emergency, for 10 example fire.

15 GB 2 076 455 describes a window fastener with a trigger grip for releasing it from engagement. EP 410 886 A1 describes a window lock with a spring-loaded catch.

15 The present invention provides a lockable handle comprising a body, a cavity defined in the body, a barrel slidable axially in the cavity, a tumbler slidable transversely of the barrel to engage the body, a bolt extending axially from the barrel for engagement with a 20 substrate to restrict movement of the handle relative to the substrate, a circumferential channel on the barrel, the channel having different profiles at two angular positions around the circumference, and a trigger pivotally mounted on the body, the trigger being engageable with the channel to hold the bolt in extended position and being 25 releasable therefrom by manual pressure on the trigger when the barrel is in one of the said angular positions but not being so releasable therefrom when the barrel is in the other of said angular positions.

30 Preferably the barrel is moveable between said angular positions by rotational pressure on a key inserted into the barrel, the key acting on the tumbler to withdraw it from engagement with the body so that the barrel is free to rotate.

35 Preferably the barrel and the bolt are generally of round cross section in the transverse plane but the barrel has a portion of reduced diameter defining the channel at the angular position in which the trigger is releasable.

One embodiment of the invention is illustrated in the

accompanying drawings, in which:

Figure 1 is a vertical cross section through a handle according to the invention;

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Figure 2 is a rear view of the handle;

Figure 3 is a vertical cross section of the main body part of the handle (to a smaller scale);

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Figure 4 is a rear view of the body part of Figure 3;

Figure 5 comprises 4 views of the lock barrel in the handle of Figure 1:

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5a is a plan view,

5b is a cross section on the line b-b in Figure 5a,

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5c is a front view,

5d is a cross section on the line d-d in Figure 5a;

Figure 6 comprises 2 views of the tumbler in the handle of Figure 25 1:

6a is an elevation,

6b is a cross section on the line b-b in Figure 6a;

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Figure 7 comprises 3 views of the back plate for closing the main body part:

7a is a cross section on the line a-a in Figure 7b,

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7b is a rear view,

7c is an underneath plan view;

Figure 8 comprises 3 views of a base plate for use with the handle:

8a is a front view,

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8b is a cross section on the line b-b in Figure 8a,

8c is a rear view.

10 The terms "top", "upper", "lower", "upward", "downward" and the like are used herein with reference to the orientation of the handle as shown in the drawings, which is not necessarily the orientation in which the handle is used.

15 As shown in the drawings a handle for windows, doors etc. comprises a main body part 1 housing a barrel 2 with a tumbler 3, and having a trigger 4 pivotally attached to the main body part 1 so as to engage the barrel 2.

20 The body part defines a generally cylindrical cavity 5 which at its top edge is extended upwardly into an upper axial channel 6 and at its bottom edge is extended downwardly into a lower axial channel 34. The barrel 2 is axially slid able to and fro in the cavity 5. The rear of the cavity is closed by a back plate 7 which has a round aperture 35 to journal the bolt 8 extending rearwardly from the barrel.

30 As shown more particularly in Figure 5, the barrel 2, which is generally cylindrical, has a keyhole 9 in its front face and an axial passage 10 through which the key is insertable. The barrel is penetrated by a guideway 11 in which the tumbler 3 is slid able up-and-down (as shown in Figure 1). The tumbler is urged upwardly by a small wire spring (not shown) which acts between a protrusion 31 on the tumbler and the main body part 1. The tumbler 3 protrudes from the upper side of the barrel and engages the axial channel 6 in the main body part. The tumbler can slide forwardly and rearwardly in the channel 6.

The barrel also has a circumferential channel 12 whose profile varies around the circumference. On the face shown on top in Figures 1

and 5b, the front wall 13 of the channel is inclined at 45° to the vertical so that the base 14 is relatively narrow. On the opposite face, shown underneath in Figures 1 and 5b, the channel has a U shaped profile and the lip 15 to the rear of the channel is of slightly

5 smaller diameter than on the first-mentioned face.

The barrel 2 mounted in the cavity 5 is urged forwardly by a helical spring 29 which surrounds the bolt 8 and is trapped between the back plate 7 and the lip 15 on the barrel.

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The trigger 4 is pivotally mounted on the body part 1 by means of pivot 17 just below the cavity 5. The pivot 17 is captured between the main body part and two side walls 36 of the back plate 7. The trigger 4 comprises a gripping portion 18, a block 19 (through which the pivot 15 passes) and a nose 20 extending upwardly from the block. The front face 21 of the nose 20 is inclined at 45° to the vertical. The front edge of the block 19 has a boss 22 which receives one end of a helical spring 23, the other end of which sits on a similar boss 24 on the main body portion 1. The main body portion extends downwardly into a conventional gripping portion 25. The gripping portion 18 of the trigger fits inside the gripping portion 25 of the main body portion 1. The nose 20 projects into the cavity 5.

The handle is mounted on a window frame or the like by a spindle 25 (not shown) received in recess 26 in conventional manner and passing through a base plate 27 as shown in Figure 8, which is secured to the frame, the bolt 8 being receivable in a round hole 28 of the base plate to lock the assembly so that the handle cannot be turned relative to the base plate. A sleeve portion 32 projecting from the main body part 30 1 around the recess 26 passes through another hole 33 in the base plate and is then splayed into the form of a rivet head to hold the assembly together.

Figure 1 shows the handle with the bolt 8 extended to engage the base plate (see Figure 8b) but the barrel is not in the deadlocked position. If the trigger 4 is squeezed manually by a hand holding the gripping portion 18 of it as well as the gripping portion 25 of the main handle part, the nose 20 on the trigger rotates anticlockwise (as seen

in Figure 1) and pushes the lip 15 of the barrel rearwardly against the spring 29. After a small rearward movement of the barrel, the nose 20 clears the edge of the lip 15 and the barrel moves forwardly under urging of the spring 29. The lip 15 passes the nose 20, the bolt 8 is 5 withdrawn from engagement with the base plate 27, and the push button 37 at the front end of the barrel pops out of the front face of the handle. The handle can then be twisted to allow the window to be opened.

When the window is closed again and the handle has been returned 10 into alignment with the base plate, the bolt 8 can be engaged in the base plate again by pushing on the push button 37 to move the barrel rearwardly against the spring 29. The lip 15 rides against the front face 21 of the nose 20 and causes the trigger to rotate in an anticlockwise direction (as seen in Figure 1) on its pivot until the 15 nose snaps into the circumferential channel 12 and reaches the position shown in Figure 1. The nose 20 cannot move further in the clockwise direction because the trigger buts against the body part 1 and so the nose holds the bolt 8 in its extended position.

20 To deadlock the assembly, a key is inserted into the keyhole 9 and through an opening 30 in the tumbler 3. A formation on the key engages the tumbler and pushes it downwardly so that it withdraws from the axial channel 6 and is retracted inside the barrel 2. Rotational pressure on the head of the key then causes the barrel to rotate 25 through  $180^{\circ}$ . As the bolt 8 is cylindrical, it can rotate in holes 35 and 28. The nose of the trigger 4 runs in the circumferential channel 12. After a  $180^{\circ}$  turn, the nose 20 has reached the region of the channel where the front wall 13 is inclined at  $45^{\circ}$ , corresponding to the inclination of the front face 21 of the nose. The lip 15 is of 30 full circumference in this region. When the key is withdrawn, the tumbler 3 projects out of the barrel again and engages the lower axial channel 34 to prevent further rotation of the barrel.

When an attempt is now made to squeeze the trigger, the nose 20 35 is trapped in the channel 12 and cannot pass the lip 15. Therefore the barrel is held by the nose 20 and cannot move forwardly to disengage the bolt 8 from the base plate. Thus the handle is deadlocked.

To release the deadlock, the key is inserted again and used to retract the tumbler and to twist the barrel through 180°. When the key is withdrawn, the tumbler 3 snaps into the upper axial channel 6. Squeezing action on the trigger then causes the nose 20 to pass the lip 5 15, as already described, so that the barrel moves forwardly and disengages the bolt.

The present invention provides a push button handle which in normal use can be released quickly (e.g. in the event of fire) by 10 10 squeezing the trigger. However the handle can also be easily deadlocked at chosen times, e.g. when premises are unoccupied.

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CLAIMS

1. A lockable handle comprising a body, a cavity defined in the body, a barrel slidable axially in the cavity, a tumbler slidable transversely of the barrel to engage the body, a bolt extending axially from the barrel for engagement with a substrate to restrict movement of the handle relative to the substrate, a circumferential channel on the barrel, the channel having different profiles at two angular positions around the circumference, and a trigger pivotally mounted on the body, the trigger being engageable with the channel to hold the bolt in extended position and being releasable therefrom by manual pressure on the trigger when the barrel is in one of the said angular positions but not being so releasable therefrom when the barrel is in the other of said angular positions.
- 15 2. A handle according to claim 1 wherein the barrel is moveable between said angular positions by rotational pressure on a key inserted into the barrel, the key acting on the tumbler to withdraw it from engagement with the body.
- 20 3. A handle according to claim 1 or 2 wherein the barrel and the bolt are generally of round cross section in the transverse plane but the barrel has a portion of reduced diameter defining the channel at the angular position in which the trigger is releasable.
- 25 4. A handle according to any of the preceding claims wherein the channel is of reduced width at the angular position in which the trigger is not releasable.
- 30 5. A lockable handle substantially as described herein with reference to and as illustrated in the accompanying drawings.

## Relevant Technical fields

(i) UK CI (Edition K ) E2A (AAR)

## Search Examiner

P J SILVIE

(ii) Int CI (Edition 5 ) E05B

## Databases (see over)

(i) UK Patent Office

## Date of Search

26 NOVEMBER 1992

(ii)

## Documents considered relevant following a search in respect of claims 1-4

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
	NONE	

Category	Identity of document and relevant passages	Relevant to claim(s)

#### Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family, corresponding document.

**Databases:** The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).

**DERWENT-ACC-NO:** 1993-245403

**DERWENT-WEEK:** 199331

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**TITLE:** Lockable handle - comprises pivoted trigger engageable with channel, on barrel of handle, to hold bolt in extended position

**INVENTOR:** CAFFERTY, C; DALY, P ; MCLNTYRE, B

**PATENT-ASSIGNEE:** DALY P J[DALYI]

**PRIORITY-DATA:** 1992IE-0000269 (January 28, 1992)

**PATENT-FAMILY:**

<b>PUB-NO</b>	<b>PUB-DATE</b>	<b>LANGUAGE</b>	<b>PAGES</b>
<b>MAIN-IPC</b>			
GB 2263722 A	August 4, 1993	N/A	015
E05B 013/10			

**APPLICATION-DATA:**

<b>PUB-NO</b>	<b>APPL-DESCRIPTOR</b>	<b>APPL-NO</b>	
<b>APPL-DATE</b>			
GB 2263722A	N/A	1992GB-0021011	October
6, 1992			

**INT-CL (IPC):** E05B013/10

**ABSTRACTED-PUB-NO:** GB 2263722A

**BASIC-ABSTRACT:**

**The lockable handle comprises a body, a cavity defined in the body, a barrel slidable axially in the cavity and a tumbler slidable transversely of the barrel to engage the body. A bolt extends axially from the barrel for engagement with a substrate to restrict movement of the handle relative to the substrate. There is a circumferential channel on the barrel. The channel has different profiles at two angular positions around the circumference. A trigger is pivotally mounted on the body.**

**The trigger is engageable with the channel to hold the bolt in extended position and is releasable from it by manual pressure on the trigger when the barrel is in one of the angular positions but not releasable from it when the barrel is in the other of the angular positions.**

**USE - For windows and doors esp. casement windows.**

**CHOSEN-DRAWING: Dwg.1/8**

**TITLE-TERMS: LOCK HANDLE COMPRISE PIVOT TRIGGER ENGAGE CHANNEL BARREL HANDLE HOLD BOLT EXTEND POSITION**

**DERWENT-CLASS: Q47**

**SECONDARY-ACC-NO:**

**Non-CPI Secondary Accession Numbers: N1993-188731**